

B A B C O C K & B R O W N

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August 18, 2004

David Parquet
Vice President
Trans Bay Cable LLC
c/o Babcock & Brown Power Operating Partners
2 Harrison Street, 6th floor
San Francisco, CA 94105

California Energy Commission
Re: Docket No. 03-IEP-01 – Transmission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5504

Gentlemen:

We are in receipt of your Notice of Committee Workshop and Availability of Transmission Update Draft Staff White Paper entitled: "Upgrading California's Electric Transmission System: Issues and Actions for 2004 and Beyond".

We have the following comments:

We want to make you aware of our Trans Bay Cable Project, an up to 600 MW high voltage direct current ("HVDC") transmission line project (the "Project") proposed between PG&E's Pittsburg Substation in Pittsburg, CA and PG&E's Potrero Substation in San Francisco, CA. This merchant transmission line Project is being developed by Babcock & Brown ("B&B") in cooperation with the City of Pittsburg. Ultimately, the Project's assets will be owned by Pittsburg (a muni) and all transmission rights will be controlled by the California ISO. B&B will finance the Project. The Project's capital, operating and other costs will be returned through cost-based rates under a tariff and agreements that must ultimately be approved by FERC and the California ISO.

In "connecting the transmission loop", we believe that the Project greatly enhances the reliability of the transmission system for the Greater Bay Area ("GBA") in general and for San Francisco specifically. Further, because the Project also relieves congestion and reduces total system losses in the GBA, the Project likely will payback its costs, and thereby reduce costs for rate payers. Because the power control feature of HVDC mimics generation, our studies further indicate that the Project will eliminate the need for continued operation of the aging generation plants in San

Mr. David Parquet/California Energy Commission
August 18, 2004
Page 2

Francisco, and thereby will positively benefit the environment in the local San Francisco communities. (The results of all of our studies to date were presented to the California ISO's San Francisco Stakeholder Study Group on July 22, 2004. A copy is attached for your review.)

We have undertaken significant due diligence on the Project and anticipate commencing the CEQA process very soon. The Project's commercial operation date is presently scheduled for early 2008. We are working with the California ISO SF Stakeholder Group in their continued evaluation of the Project.

The Commission might consider adding the Trans Bay Cable Project to its watch list of transmission projects.

Sincerely,

A handwritten signature in black ink, consisting of a series of connected loops and a long horizontal stroke extending to the right.

David Parquet

Attachment: Presentation to Cal-ISO Stakeholder Meeting, San Francisco Stakeholder Study Group, July 22, 2004



Babcock & Brown

Trans Bay Cable Project Need Study

**Presentation
To
Cal-ISO Stakeholder Meeting
San Francisco Stakeholder Study Group**

July 22, 2004

B A B C O C K & B R O W N



Trans Bay Cable Project – Topics of Discussion

- **General Project Description**
- **Need Study Assumptions for Preliminary Analysis**
 - ◆ Assumptions/Methodology
 - ◆ Case Analysis
 - ◆ Case Matrix Example
- **Initial Project Analysis**
 - ◆ Power Flow Contingency Analysis
 - ◆ Plots showing Greater Bay Area power flows – pre and post Trans Bay Cable Project



Trans Bay Cable Project – Topics of Discussion, cont'd

- **Estimated Project Benefits and Costs**

- ◆ Loss reductions
- ◆ Other (transmission) project deferrals
- ◆ RMR savings
- ◆ Economic Dispatch Savings
- ◆ Project costs
- ◆ Comparison of estimated Project benefits and costs
- ◆ Other Project benefits

- **Conclusions and Next Steps**

- **Appendices**

- ◆ Project Participants



Trans Bay Cable Project

General Project Description



Trans Bay Cable Project - Summary

- **The Project will be a new High Voltage Direct Current (HVDC) transmission system from the generation rich East Bay (PG&E Pittsburg Substation) into San Francisco (PG&E Potrero Substation)**
 - ◆ Cooperative development with City of Pittsburg
- **DC technology has been proven reliable and effective in other jurisdictions**
 - ◆ Power control feature mimics local generation, with higher reliability than a generator
 - ◆ Siemens/Pirelli will supply the HVDC converter stations/interconnecting cables
- **Significant monetary, reliability and environmental benefits, including retirement of all units at the Potrero Power Plant**
- **Revenue recovery based on FERC-approved cost-based rates under a PTO tariff with the CAISO**
 - ◆ Babcock & Brown will provide the financing
 - ◆ City of Pittsburg will own the Project assets
 - ◆ Transmission rights will be turned over to the CAISO under a negotiated Transmission Control Agreement
- **Schedule: Commercial Operation Date anticipated to be late 2007/early 2008**



Trans Bay Cable Project – HVDC System Attributes

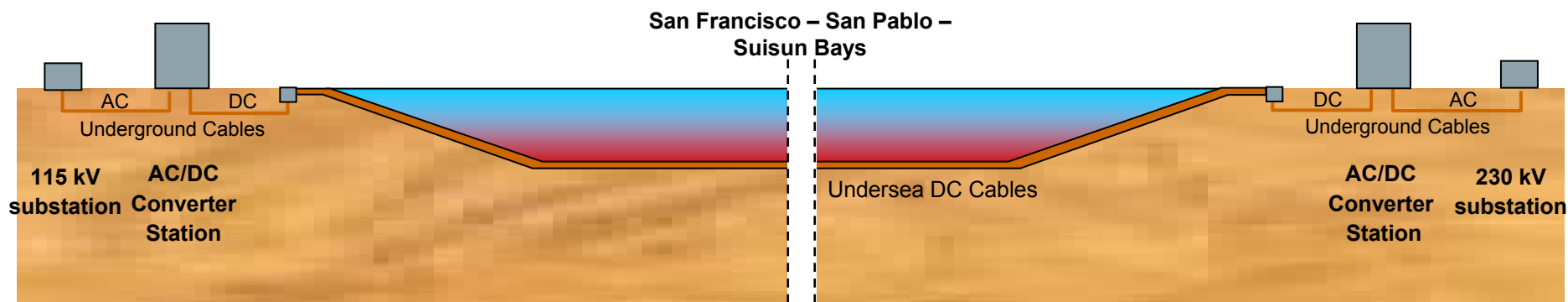
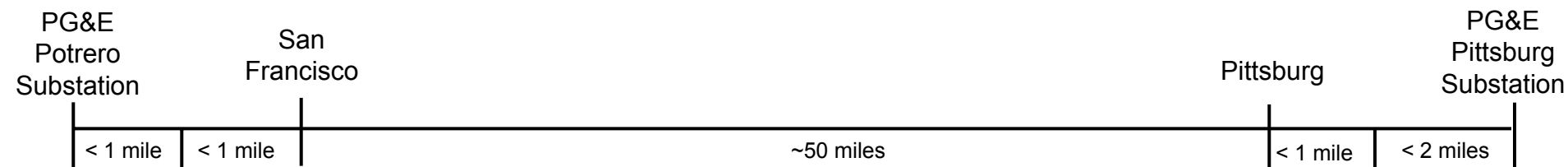
- **Controllable Power** - Exact power flow - Generation to Load
 - ◆ **Operational Flexibility** – ability to “dial in a flow”
- **Invisible Transmission** - Energy exchange via Sea Cable
- **Firewall Protection** – AC system disturbances kept isolated
- **Enhancement** of AC system stability
- **No Increase** of Short-Circuit Current
- **Reduced** System Line losses
- **Inherent** Overload Capability (10% continuous overload duty; up to 25% for up to 4 hours)
- **Reactive Power** control / support of AC voltage



Trans Bay Cable Project – Cable Interconnections

System Data:

Transmission Capacity: 600 MW
DC Voltage: ± 500 kV DC



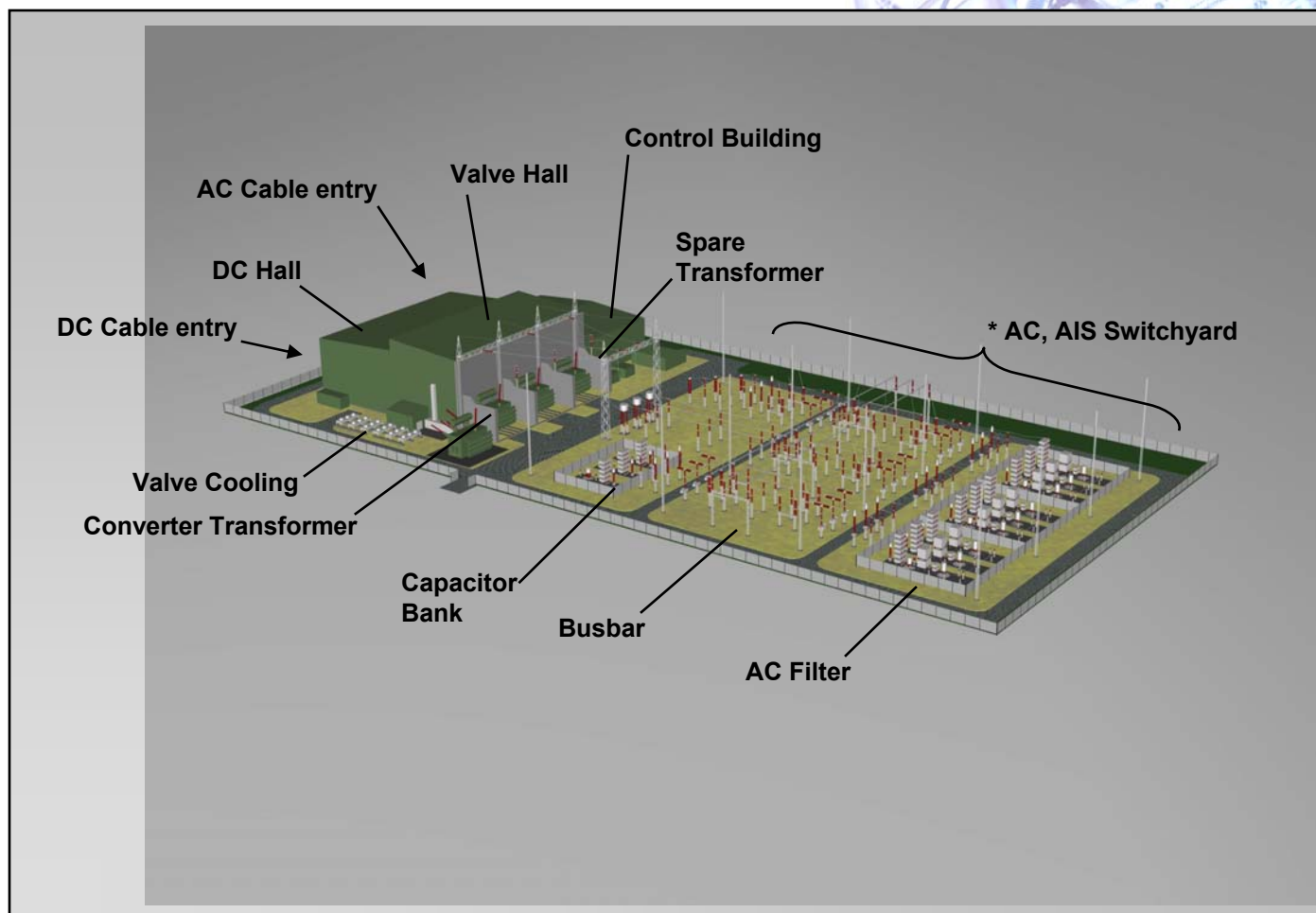


Trans Bay Cable Project – Submarine Cable Route



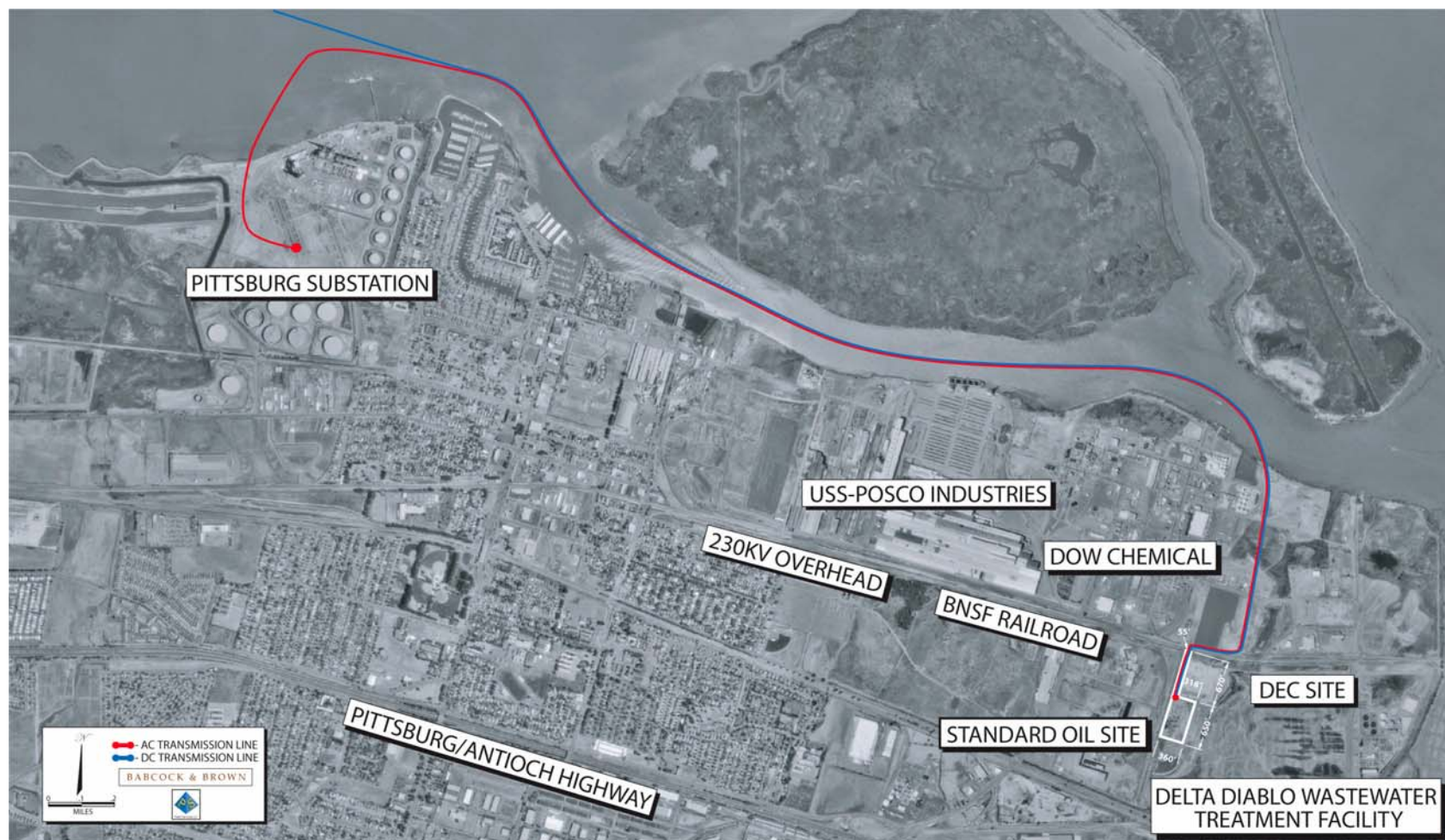


Trans Bay Cable Project – Typical AC-DC Converter Station



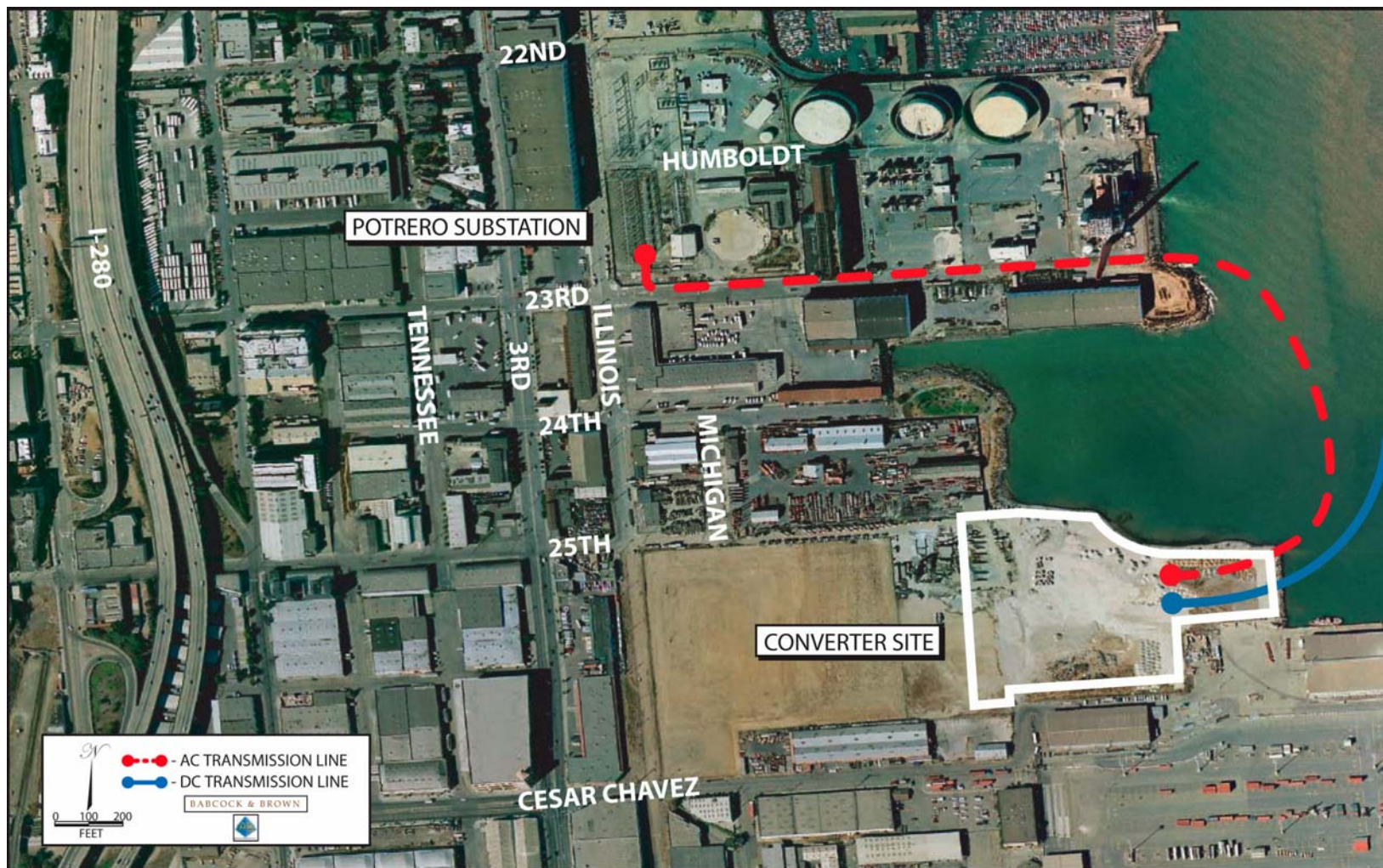


Trans Bay Cable Project – Aerial View of Proposed Site in Pittsburg – Option 1



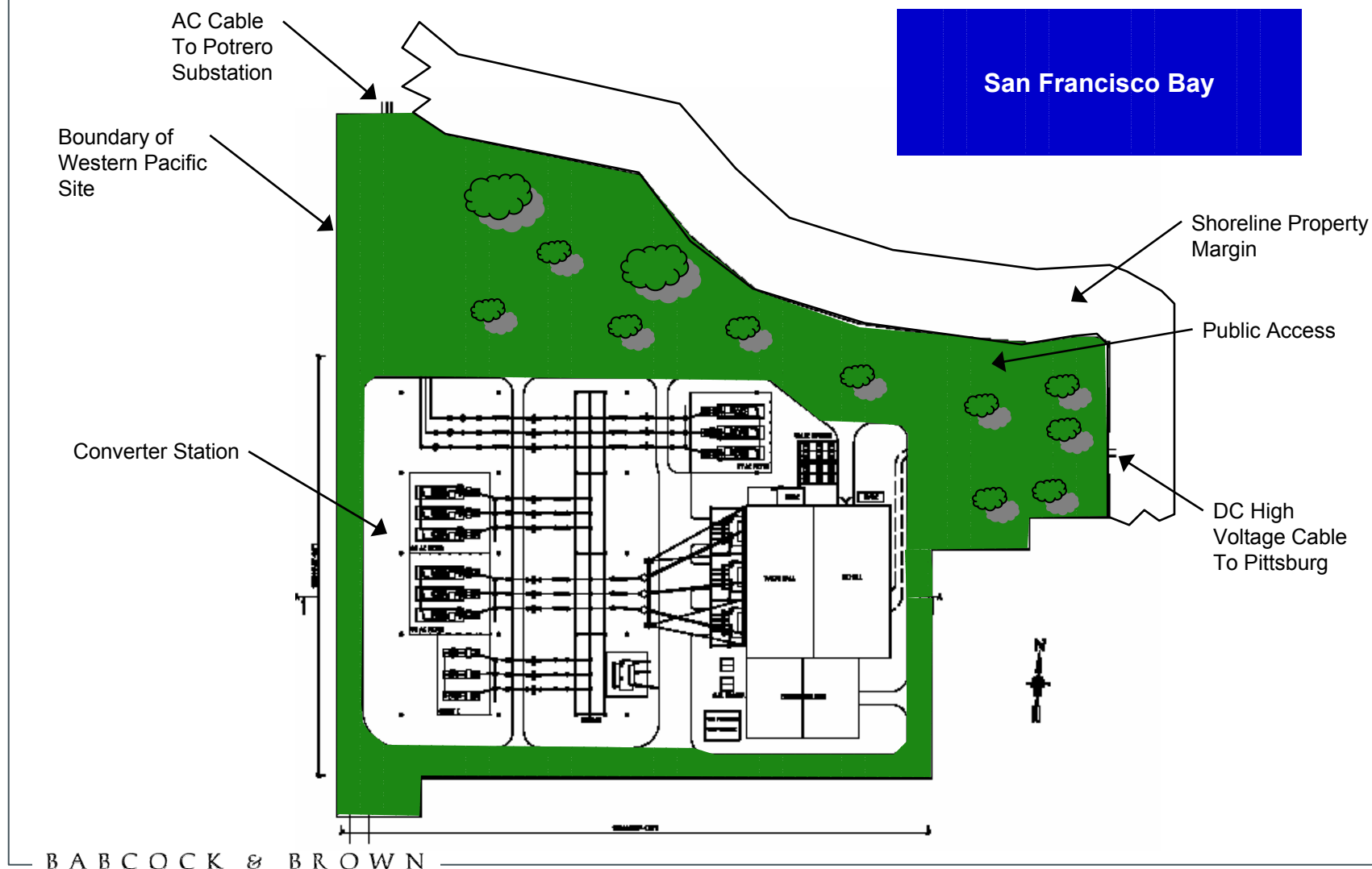


Trans Bay Cable Project – Aerial View of Proposed Site in San Francisco – Option 2





Trans Bay Cable Project – Converter Station on Western Pacific Site in San Francisco (Preliminary Layout)





Trans Bay Cable Project – Proposed Cable Laying Vessel

Cablesip – *Giulio Verne*

Main features

- | | |
|----------------------------------|-------------------------|
| • Length Overall | 133 m |
| • Moulded Breadth | 30 m |
| • Draft | 8.5 m |
| • Gross Tonnage | 10,617 tons |
| • Dynamic Positioning Control | |
| • Total propulsion Power | 5,710 kW |
| • Capstan 6 m diameter, | 50 tons pulling tension |
| • Linear laying machine | 10 tons pulling tension |
| • Turntable, external dia. 25 m, | capacity 7,000 tons |





Trans Bay Cable Project – Cable Laying and Burial Operation Will Take Less Than One Month*

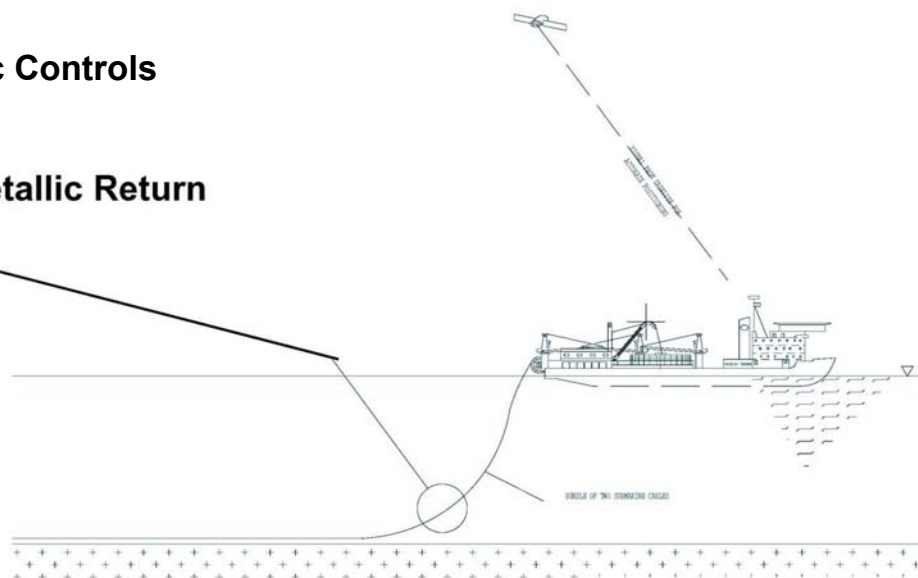
500 kV dc

Fibre Optic Controls

Metallic Return

The cables will be simultaneously installed in a Bundle configuration, fastened together with ropes and straps applied before approaching the laying sheave.

*A short installation schedule will avoid spawning seasons and fisheries issues.



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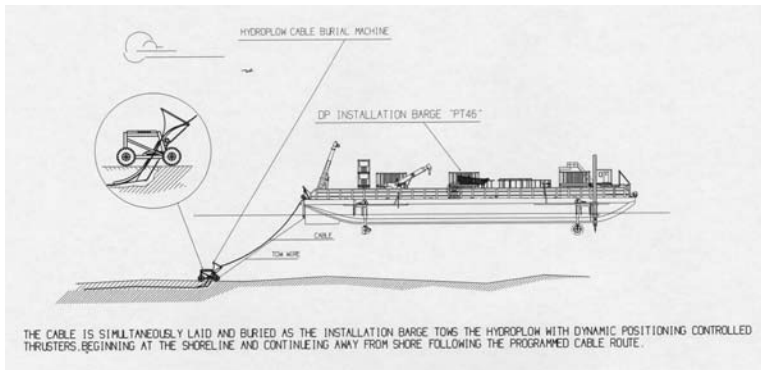
Trans Bay Cable Project – Cable Burial Operation Using Hydroflow Operated From Barge



Hydroflow-3 Power Cable Embedment Sled



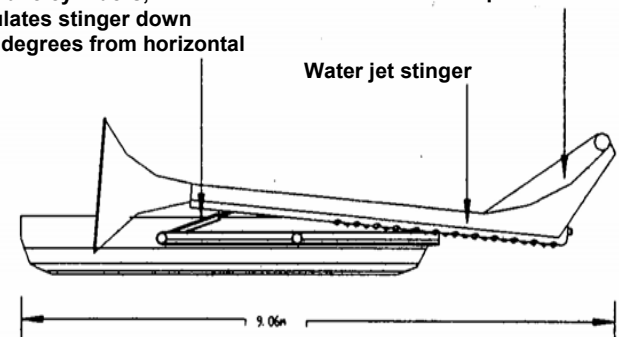
PT-46 DP BARGE
for use in shallow water



Hydraulic cylinders,
articulates stinger down
to 60 degrees from horizontal

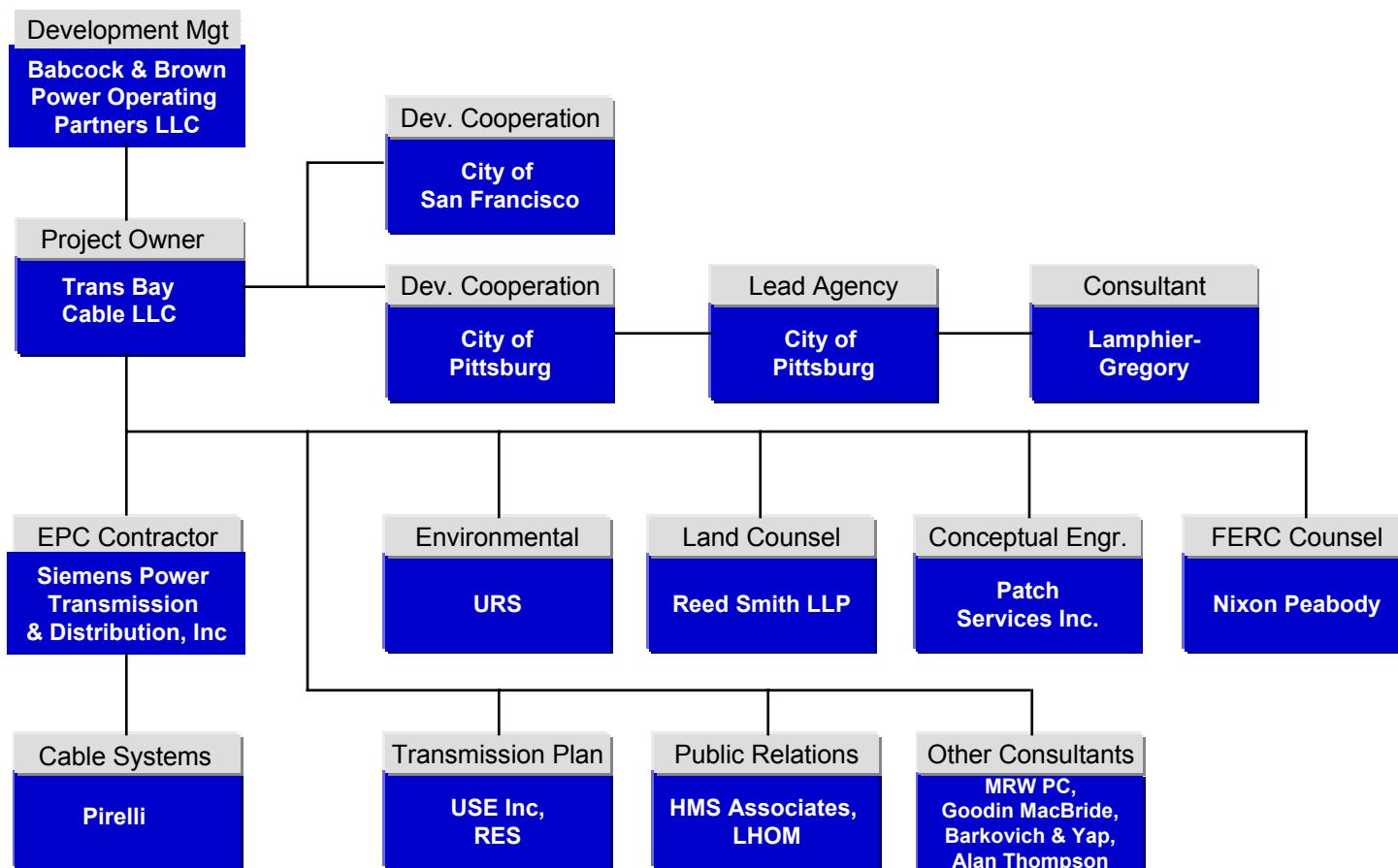
Radius depresser foot

Water jet stinger



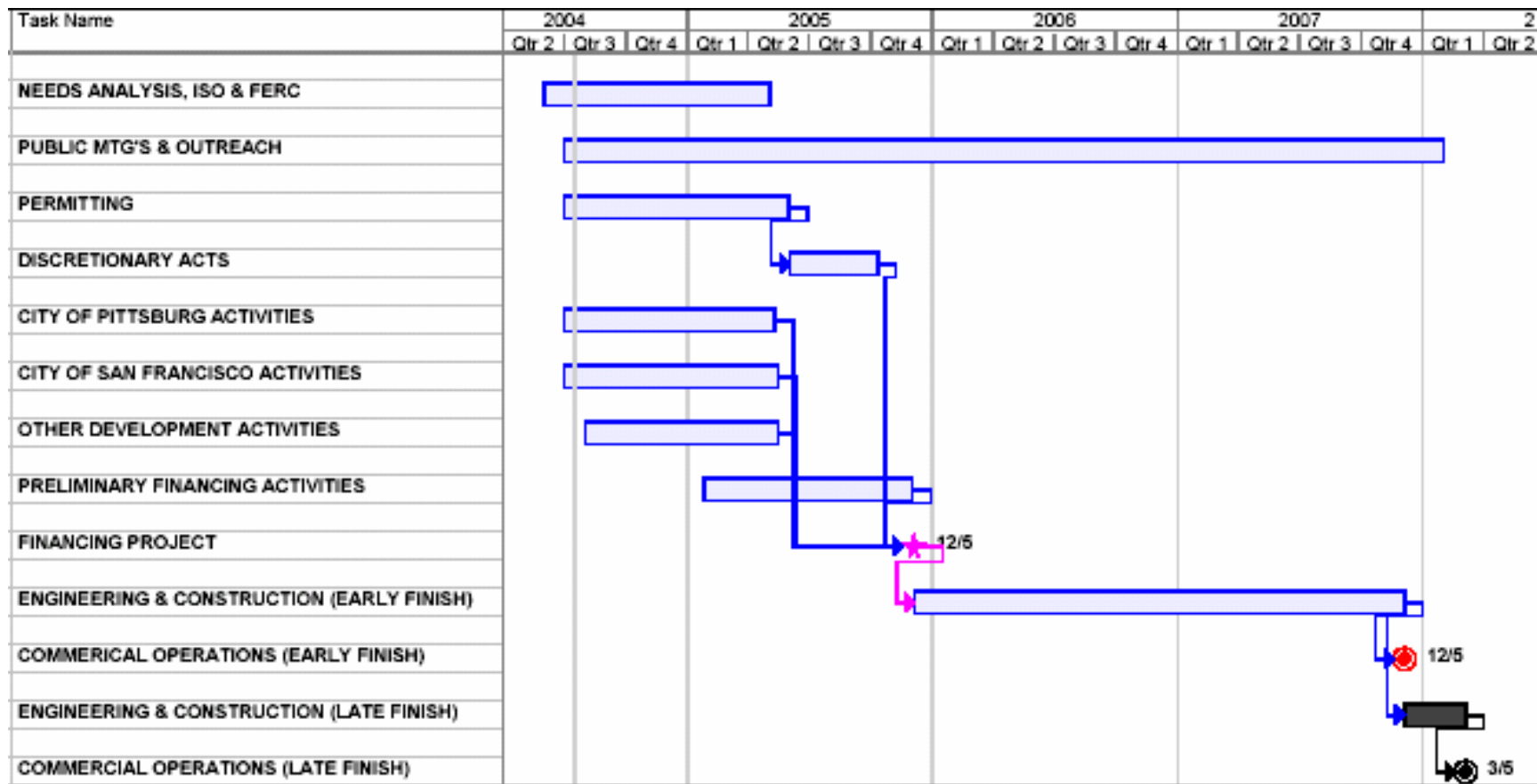


Trans Bay Cable Project – Development Team





Trans Bay Cable - Schedule





Trans Bay Cable Project

Need Study Assumptions



Trans Bay Cable Project - Assumptions/Methodology

- **Most current PG&E Planning base case(s) were obtained for case years: 2004, 2008, 2009 & 2014**
- **Summer Peak – Bay Area summer peak load levels are modeled**
- **Only new generation projects under construction have been modeled in our analysis. New generation projects not under construction will be studied as sensitivities.**
- **Hunters Point Power Plant – Assumed shut-down in 2006.**
- **Jefferson Martin in operation**
- **San Francisco Bay Area potential generator retirement scenario outlined in the 2004 CAISO Controlled-Grid Study Plan will be studied.**
- **Trans Bay Cable HVDC system rated at 600 MW, alternative 400 MW (initial study assumption only)**
 - ◆ **Reactive power exchange with grid is neutral (initial study assumption only)**



Trans Bay Cable Project – Case Analysis

- **Preliminary study work conducted power flow contingency analysis to identify thermal and voltage violations.**
- **CAISO Grid Planning criteria used for category “B” and category “C” contingencies.**
- **CAISO Greater Bay Area Planning Criteria utilized for category “B” contingencies.**
- **Case matrix developed to identify all studied scenarios.**



Trans Bay Cable Project – Case Matrix Example

ID	Power Flow Base Case	TBCP (HVDC)	HPPP	Potrero 3	Potrero Peakers	SFO Peaker	Oakland CT 1	Oakland CT 2	Oakland CT 3	L-1, T-1, Local G-1,L-1	G-1	N-2	L-1 Only
Phase I - Analysis Based on Standard CAISO Grid Planning Criteria													
10	HSPRE000.sav	--	--	210	150	--	50	50	50	Y	Y	Y	N
	HSPST000.sav	600	--	210	150	--	50	50	50	Y	Y	Y	N
11	HSPRE100.sav	--	--	--	150	--	50	50	50	Y	Y	Y	N
	HSPST100.sav	600	--	--	150	--	50	50	50	Y	Y	Y	N
12	HSPRE200.sav	--	--	--	--	--	50	50	50	Y	Y	Y	N
	HSPST200.sav	600	--	--	--	--	50	50	50	Y	Y	Y	N
Phase II - Analysis Based on Greater Bay Area Planning Criteria (Turn Off Potrero 3, One CCSF Peaker & One Oakland CT)													
22	HSPRE010.sav	--	--	OFF	100	--	OFF	50	50	Y	Y	N	N
	HSPST010.sav	600	--	OFF	100	--	OFF	50	50	Y	Y	N	N
23	HSPRE110.sav	--	--	--	100	--	OFF	50	50	Y	Y	N	N
	HSPST110.sav	600	--	--	100	--	OFF	50	50	Y	Y	N	N
24	HSPRE210.sav	--	--	--	--	--	OFF	50	50	Y	Y	N	N
	HSPST210.sav	600	--	--	--	--	OFF	50	50	Y	Y	N	N
Phase III - Analysis Based on Greater Bay Area Planning Criteria (Phase II) and G-1,L-1													
89	HSPRE111.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST111.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
90	HSPRE112.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST112.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
91	HSPRE113.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST113.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
92	HSPRE114.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST114.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
93	HSPRE115.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST115.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
94	HSPRE116.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST116.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
95	HSPRE117.sav	--	--	--	100	--	OFF	50	50	N	N	N	Y
	HSPST117.sav	600	--	--	100	--	OFF	50	50	N	N	N	Y
96	HSPRE211.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST211.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
97	HSPRE212.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST212.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
98	HSPRE213.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST213.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
99	HSPRE214.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST214.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
100	HSPRE215.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST215.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
101	HSPRE216.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST216.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
102	HSPRE217.sav	--	--	--	--	--	OFF	50	50	N	N	N	Y
	HSPST217.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
Phase IV - CCSF Peakers vs TBCP (SFO Peaker Modeled at East Grand 115)													
103	HSPRE310.sav	--	--	--	100	50	OFF	50	50	Y	Y	N	N
	HSPST310.sav	600	--	--	--	--	OFF	50	50	Y	Y	N	N
104	HSPRE311.sav	--	--	--	100	50	OFF	50	50	N	N	N	Y
	HSPST311.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y
Phase V - PG&E Assessment Base Case vs TBCP													
105	HSPRE010.sav	--	--	OFF	100	--	OFF	50	50	Y	Y	N	N
	HSPST010.sav	600	--	--	--	--	OFF	50	50	Y	Y	N	N
106	HSPRE011.sav	--	--	OFF	100	--	OFF	50	50	N	N	N	Y
	HSPST011.sav	600	--	--	--	--	OFF	50	50	N	N	N	Y



Trans Bay Cable Project

Initial Project Analysis



Trans Bay Cable Project – Power Flow Contingency Analysis

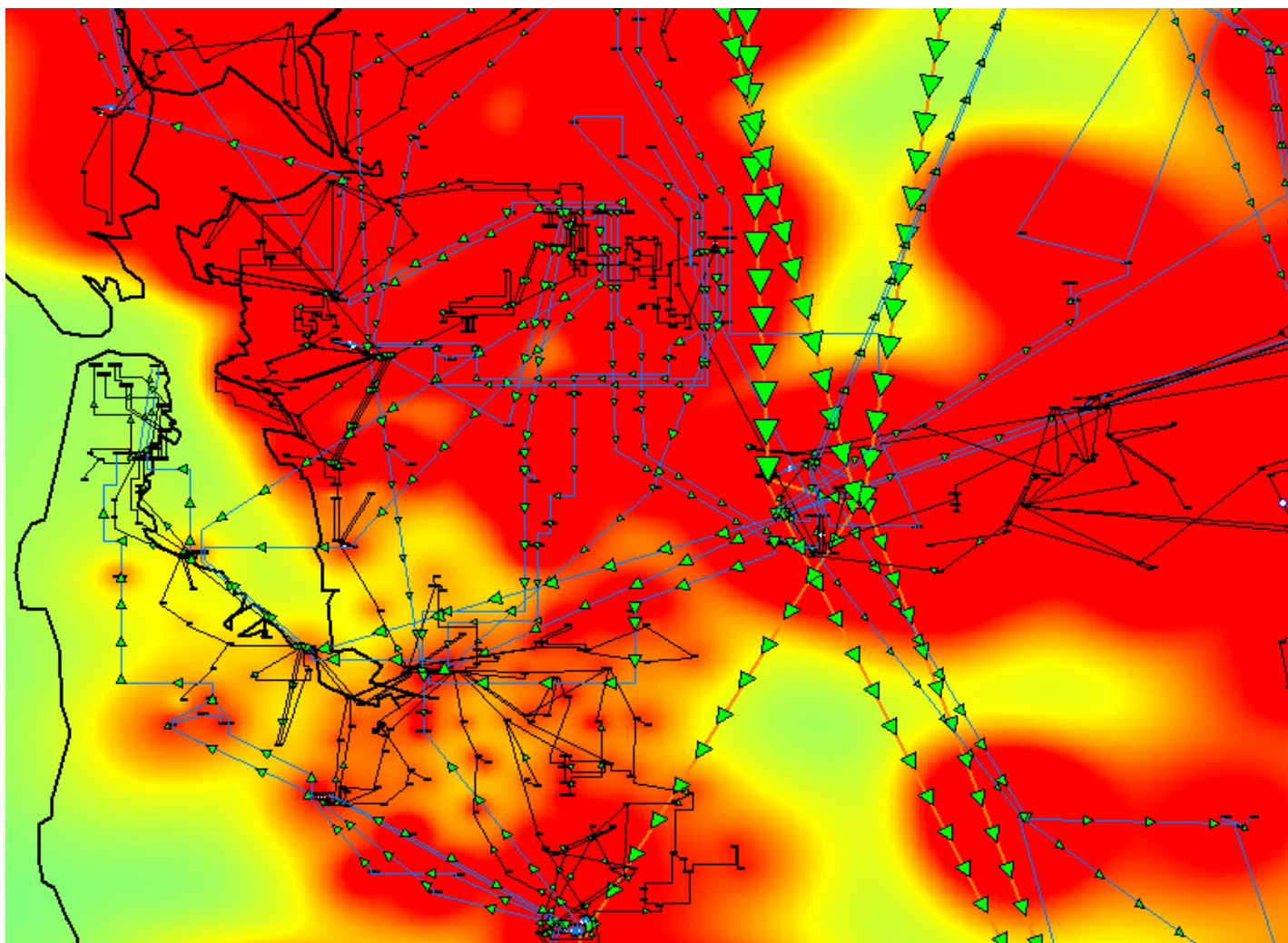
- 2008 Results with Potrero Off and Peakers Off

		Utilizing CAISO Bay Area Criteria				Emergency rating (amps)
Contingency	Overloaded Element	Pre-Project (Emergency Rating)	Post-Project (Emergency Rating)	Delta	Ramp TBC DC Back to X MW to mitigate Overloaded Element	
Larkin E - Potrero #1 115-kV, DEC Plant Off.	Mission-Potrero #1 115-kV	61.3	116.25	54.95	425 MW	700

- A Special Protection Scheme (SPS) will ramp back DC flow to mitigate the overloaded Mission – Potrero #1 115-kV cable

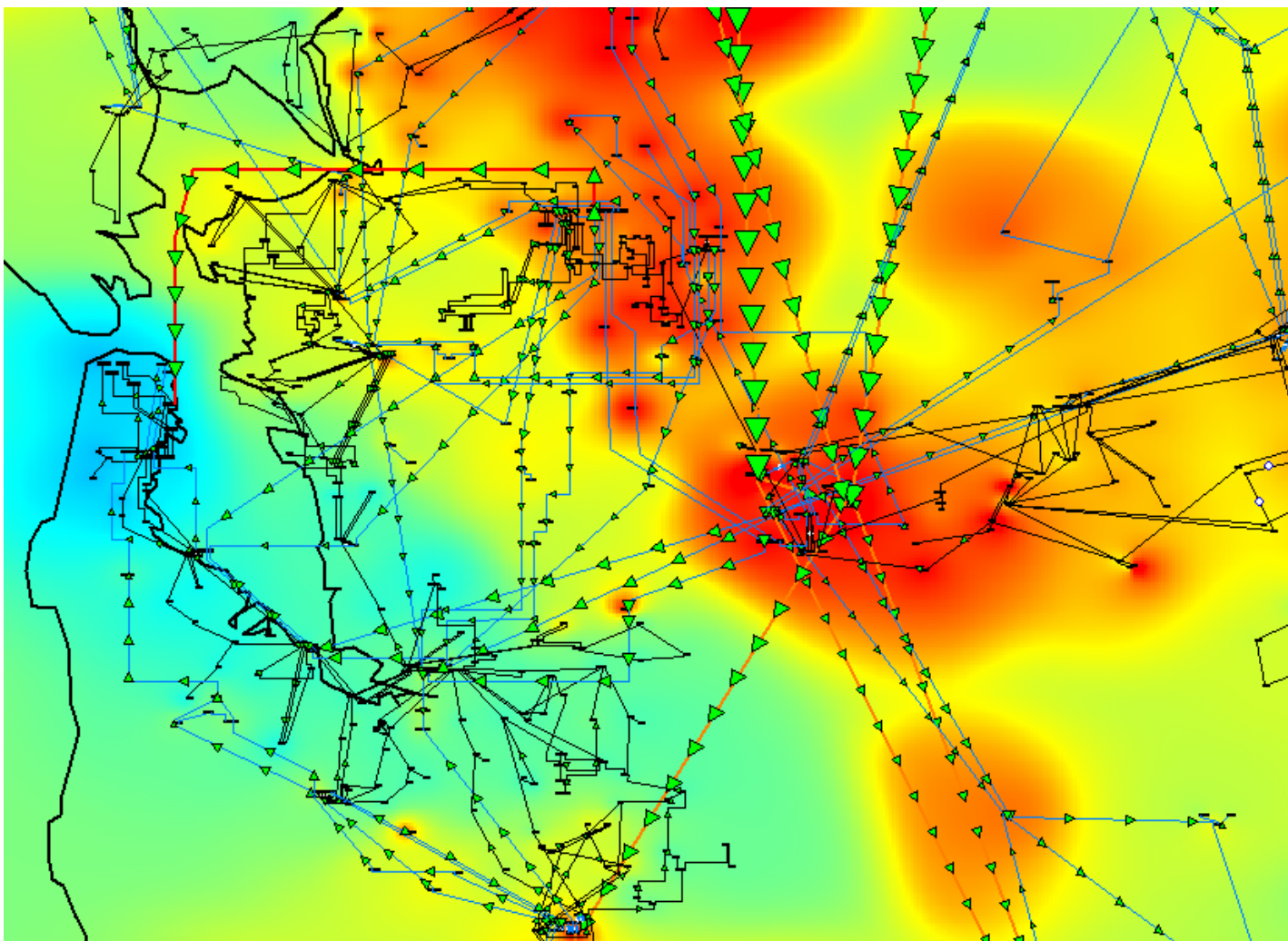


Trans Bay Cable Project - Plots Showing Greater Bay Area Power Flows – Trans Bay Cable Project OFF, Potrero ON





Trans Bay Cable Project - Plots Showing Greater Bay Area Power Flows – Trans Bay Cable Project ON, Potrero OFF





Trans Bay Cable Project

Estimated Project Benefits and Costs



Trans Bay Cable Project - Loss Reductions – 600 MW

• Approximate System Loss Reductions with Trans Bay Cable Project

Time of Day [‡]	Loss Reduction
Peak hours	36 MW
Intermediate hours	26 MW
Off-peak hours	14.6 MW

[‡]Peak hours indicate that 15% (1,314 hours) of the year the system has a loss reduction of approximately 36 MW per hour.

Intermediate hours indicate that 65% (5,694 hours) of the year the system has a loss reduction of approximately 26 MW per hour.

Off-peak hours indicate that 20% (1,752 hours) of the year the system has a loss reduction of approximately 14.6 MW per hour.

• Approximate Annual Loss Savings with Trans Bay Cable Project

Time of Day (Energy value)	Loss Savings
peak hours - \$60 (min)	\$ 2,838,240
peak hours - \$189 (max)	\$ 8,940,456
intermediate hours - \$62	\$ 9,178,728
off-peak hours - \$46.50	\$ 1,189,433
Total (min savings)	\$ 13,206,401
Total (max savings)	\$ 19,308,617

Since peak hour energy cost is very volatile, a minimum and maximum value was used to capture the swing in energy price.

Intermediate and off-peak hour energy was more predictable and not as volatile as the peak energy cost; hence, no min and max cost was used.



Trans Bay Cable Project - Loss Reductions – 400MW

• Approximate System Loss Reductions with Trans Bay Cable Project

Time of Day [‡]	Loss Reduction
Peak hours	28 MW
Intermediate hours	22 MW
Off-peak hours	12 MW

[‡]Peak hours indicate that 15% (1,314 hours) of the year the system has a loss reduction of approximately 28 MW per hour.

Intermediate hours indicate that 65% (5,694 hours) of the year the system has a loss reduction of approximately 22 MW per hour.

Off-peak hours indicate that 20% (1,752 hours) of the year the system has a loss reduction of approximately 12 MW per hour.

• Approximate Annual Loss Savings with Trans Bay Cable Project

Time of Day (Energy value)	Loss Savings
peak hours - \$60 (min)	\$2,207,520
peak hours - \$189 (max)	\$6,953,688
intermediate hours - \$62	\$7,766,616
off-peak hours - \$46.50	\$977,616
Total (min savings)	\$10,951,752
Total (max savings)	\$15,697,920

Since peak hour energy cost is very volatile, a minimum and maximum value was used to capture the swing in energy price.

Intermediate and off-peak hour energy was more predictable and not as volatile as the peak energy cost; hence, no min and max cost was used.



Trans Bay Cable Project - Other Transmission Project Deferrals

- **Initial Study found only limited transmission project deferrals due to Project**
- **Reconductoring of Metcalf – Vasona 230-kV line in 2014**
 - ◆ Project can be deferred for approximately 2 years
 - ◆ Estimated project cost: \$6 million (\$2004)



Trans Bay Cable Project - RMR Savings

- **ISO is changing RMR methodology**
- **Project will improve RMR situation on San Francisco Peninsula**
- **However, Project may displace RMR requirements to another part of the Greater Bay Area system**
- **No clear RMR savings conclusions for the Project can be drawn at this time for 2008**



Trans Bay Cable Project - Economic Dispatch Savings

- Economic Dispatch savings for 600 MW and 400 MW Projects are the identical
- Differences in calculated values could occur due to modeling assumptions. Examples of modeling variances include demand, transmission outages, voltage limitations and gas price variations that would affect bids for individual resources.
- Assuming the Bay area system has high congestion approximately 15%[†] of the year, Economic Dispatch savings would yield:

	Peak (15 % of year)		Intermediate		Off-Peak	
	Pre-project	Post-project	Pre-project	Post-project	Pre-project	Post-project
Average Economic Dispatch Price (\$/MWh)	\$58.20	\$51.07	\$49.15	\$47.33	\$37.16	\$37.16
Generator Profit (\$/hr)	\$44,708	\$23,621	\$21,549	\$18,218	\$6,893	\$1,935
Reduction in Generator Profit (Savings) (\$/hr)	\$21,087		\$3,331		\$4,953	
Annual savings (\$/yr)	\$27,708,922		\$18,969,504		\$8,685,593	
Total Annual Savings (\$/yr)	\$55,355,626					

Intermediate congestion occurs approximately 65% of the year and Off-Peak congestion occurs approximately 20% of the year.

[†] Market Design 2002, Locational Marginal Pricing (LMP) Study, Analysis of Cost-Based Price Differentials

<http://www.caiso.com/docs/2003/02/05/2003020513210610375.pdf>, Appendix H



Trans Bay Cable Project – Comparison of Estimated Project Benefits and Costs

- Summary of Estimated First Year (2008) Benefits (\$/yr)*

	600 MW	400 MW
- Loss Reductions	\$19 million	\$16 million
- Project Deferrals	Negligible	Negligible
- RMR	To be determined	To be determined
- Economic Dispatch	\$55 million	\$55 million
TOTAL	\$75 million	\$71 million

*These benefits will escalate as market power prices escalate

- Summary of Estimated Annual Costs

	600 MW	400 MW
First Year (2008) Cost	\$86 million	\$65 million
30 Year Average	\$70 million	\$53 million



Trans Bay Cable Project – Additional Project Benefits

- **Significant Environmental Benefits**

- ◆ We believe that the Potrero Power Plant can be FULLY retired
- ◆ Clean system power will serve San Francisco; including emissions reduction from 36 MW peak power production reduction
- ◆ Terminals produce no pollution, no moving parts, little noise, primarily housed in a building

- **Enhanced Reliability**

- ◆ Power control feature of DC mimics local generation, with higher reliability than a generator
- ◆ Pittsburg – San Francisco line “completes the GBA transmission loop”
- ◆ System security increased as buried DC cables will be in separate corridor from any existing AC lines
- ◆ Reduced power flow on existing Peninsula and East Bay lines, benefiting entire Bay Area



Trans Bay Cable Project

Conclusions and Next Steps



Trans Bay Cable Project - Conclusions

- **Based on steady-state contingency analysis, Potrero Power Plant can reliably be shut down, assuming planned transmission system upgrades are in place for 2008.**
- **Limited additional studies are required. See next steps.**
- **Expected annual economic benefits of the Trans Bay Cable Project exceed expected annual cost:**
 - ◆ 600 MW: Approximate Benefits/Costs - \$75 million (2008) / \$70 million (30 yr average)
 - ◆ 400 MW: – Approximate Benefits/Costs - \$71 million (2008) / \$53 million (30 yr average)
- **We suggest proceeding with 600 MW Project, to cover San Francisco transmission issues well into the future**
- **Significant reliability benefits**
 - ◆ Completes the GBA transmission loop
 - ◆ Separate transmission line corridor
 - ◆ Increased security



Trans Bay Cable Project –Next Steps

- **In concert with Stakeholder Study Group, additional Studies are recommended**
 - ◆ Determine study process with other parties
 - ◆ Perform transient stability analysis
 - ◆ Perform voltage stability analysis
 - ◆ Generation scenario sensitivity analysis
 - ◆ Complete 2014 Analysis
 - ◆ Perform load-serving capability analyses
- **In order to reach Commercial Operation by early 2008, near term ISO approval required**
- **Commence EIR process**
- **Active input and support required by the numerous interested stakeholders**



Trans Bay Cable Project - Appendices

Project Participants



Babcock & Brown – Key Facts

- **Specialists in arranging financing for, managing, and acquiring a target spectrum of “big ticket” assets such as power generation and transmission assets, aircraft, and rail cars around the world**
 - ◆ Financial Advisor/Placement Agent
 - ◆ Asset/Funds Management
 - ◆ Principal Investing
- **\$110 billion of asset-based financings and acquisitions arranged over the past five years (\$17 billion in 2003)**
- **Over \$6.5 billion of power, aircraft, rail and infrastructure under management**



- ◆ Founded in 1977
- ◆ 465 Employees in 22 offices and 14 countries
- ◆ 80% employee owned and 20% owned by HypoVereinsbank (HVB)



City of Pittsburg – Key Facts

- **City of Pittsburg Established 1903 near confluence of the Sacramento and San Joaquin Rivers in the Sacramento River Delta**
- **Population today approximately 60,000**
- **Municipal Utility (Pittsburg Power Company) created in 1996**
- **Owner of Gas and Electric Distribution Systems on Mare Island, Vallejo, California**
- **Facilitated the development of the Los Medanos Energy Center (550 MW)**
- **Acquired Rights of Way for the Delta Energy Center transmission line (880 MW)**



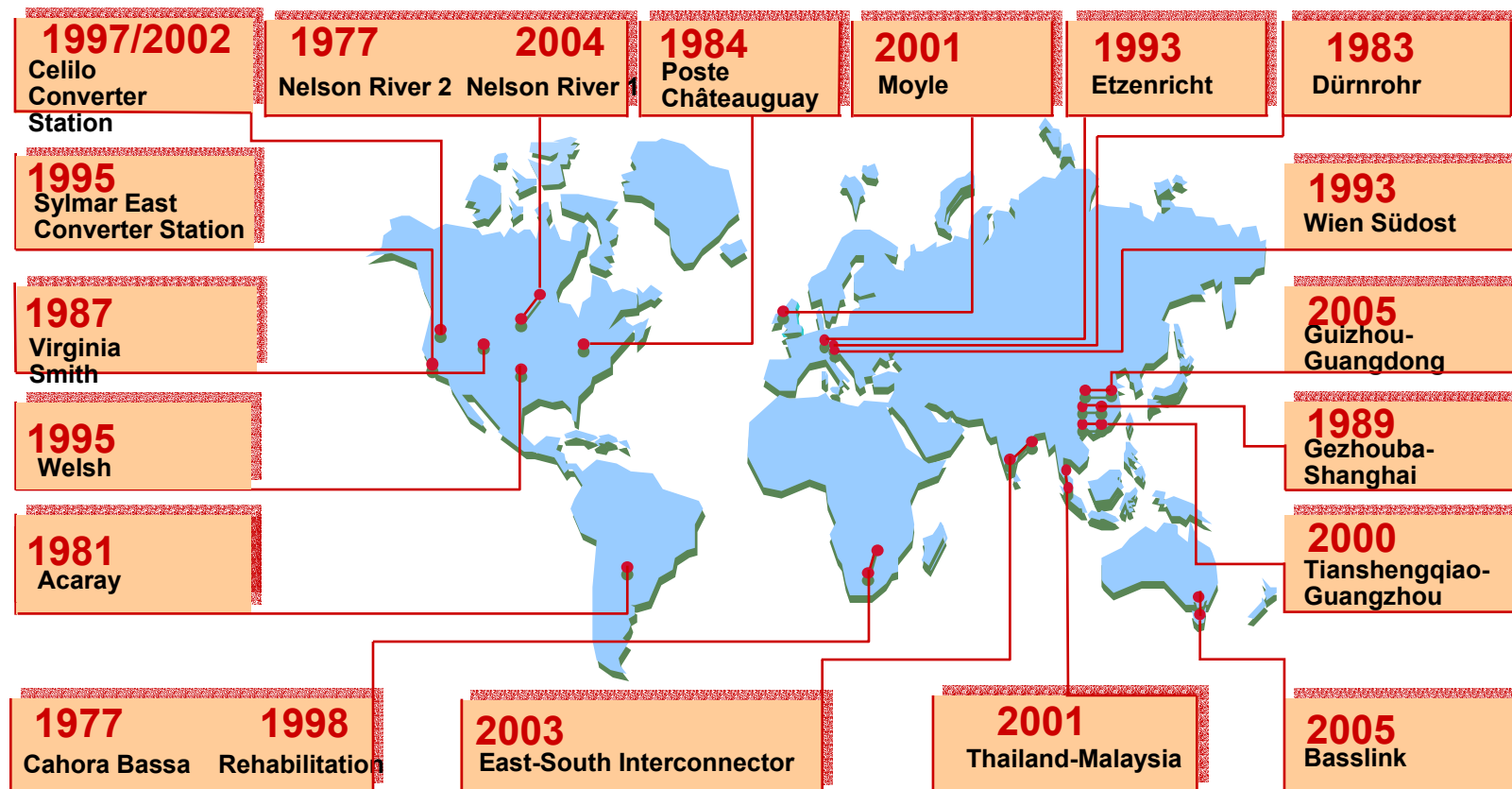


Siemens – Key Facts

- **Broad range of products, systems, and services for the Energy & Power, Industry & Automation, Information & Communication, Healthcare, Transportation, and Lighting markets**
 - ◆ Global Leader in electronic and electrical equipment manufacturing
 - ◆ Turnkey supplier of power generation and transmission systems around the world
 - ◆ Advanced Technology Solutions for Transmission Grids – HVDC & FACTS
- **\$75+ billion in sales and \$76+ billion in new orders in 2003**
- **\$5.1+ billion and 45,300 employees dedicated to R&D in 2003**
 - ◆ Founded in 1847
 - ◆ 417,000 Employees in 192 countries
 - ◆ 65,000 Employees in the USA working in 675 locations
 - ◆ \$16.6 billion in USA based sales for 2003



Trans Bay Cable Project – Siemens HVDC Experience





Pirelli – Key Facts

An International Group with Over 110 Years Experience



Total sales in 2003 = +\$6.0 bln
77 Factories in 22 countries
33,400 Employees

- 1887 First Submarine Cable Installed**
- 1906 First Submarine Cable Produced & Installed**
- 1912 Pirelli Design World's First Ever Oil Filled Cable**
- 1977 Commissioned first ever 1000kV Land Cable**
- 2000 Longest AC Cable ever produced (Isle of Man-UK mainland) & deepest submarine HV cable installation at 1000m (Italy-Greece)**
- 2002 Longest DC Cable link produced & installed by Pirelli in the Bass Strait (Australia-Tasmania)**

High Voltage Test Lab

